PAT MCCRORY
GOVERNOR

April 14, 2014

Chairman Thomas Wheeler
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Dear Chairman Wheeler:

I am writing to offer my personal support for North Carolina's request for a Demonstration project that will establish the benefits of providing broadband access to all learners in North Carolina. As our State makes the transition to Digital Learning, we recognize the need to extend broadband from the school house door to the inside of the classroom.

As you learned recently from my leadership team, North Carolina has made a strong commitment to Digital Learning, having invested over $150 million in state funds since 2005 to supplement E-rate. As a result, 100% of North Carolina's K-12 schools are already served by high-speed data, and nearly 98% will be served by fiber connections by July 2014. My administration is committed to providing every student in North Carolina with full access to the opportunities offered by Digital Learning.

Last year I signed North Carolina Session Law 2013-12, which encourages all K-12 public schools to shift from textbooks to digital content. I believe that North Carolina presents the Commission with a unique opportunity to support our goal of providing access to 100% of our schools. We also believe that your participation in this Demonstration will provide unparalleled insight into the methods that other states can use to pursue our shared interests. I ask that the Commission assist with this important effort by approving our proposed Demonstration.

Our goals for North Carolina's Digital Learning initiative align well with your effort to reform E-rate in support of our mutual objectives. On behalf of our State, I look forward to working with the Commission and demonstrating what is possible when leaders foster innovation and support bold action.

Thank you for your kind attention and consideration.

Sincerely,

Pat McCrory
Governor of North Carolina

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:	)
	)
Modernizing the E-rate	) WC Docket No. 13-184
Program for Schools and Libraries	)

PROPOSAL OF THE STATE OF NORTH CAROLINA
IN RESPONSE TO DA-14-308
WIRELINE COMPETITION BUREAU PUBLIC NOTICE OF MARCH 6, 2014
SEEKING FOCUSED COMMENT ON E-RATE MODERNIZATION

I.   Introduction and Summary

The State of North Carolina appreciates the opportunity to request that the

Commission authorize a demonstration or experiment in which the State of North

Carolina is granted funds to build out "inside the classroom access" to the 78% of

locations that have inadequate internal infrastructure to meet the needs of a one-to-one

learning environment. The State makes this request as a single consortium of more than

100 counties, 115 Local Education Agencies (LEAs), and collected colleges and

universities. Session Law 2013-12, passed by the General Assembly with support from

my administration, encourages the delivery of Digital Learning to all students. Our State

has a proven track record of success, with 98% of our K-12 schools and 100% of K-12

districts already served by dedicated fiber. North Carolina requests that the Commission

act on this as a high-priority request so the State can extend access from the school

house door to the classroom.

II.   North Carolina Will Demonstrate How E-rate Can Support Digital Learning

As the Commission is well aware, the initial Universal Service funds were

established to subsidize the build-out of a national telephone system because the nation

would be best served if every person had the opportunity to access the network. In the

same way, the E-rate system was originally proposed in recognition that the nation

would be best served if every person could access what was expected to be an ever-growing set of resources and services offered through the Internet. The purpose of E-rate was to subsidize the cost of providing this access.

The challenge now faced by the Commission is that E-rate is no longer structured to provide sufficient access because the nature of the demand has changed dramatically. What would have been sufficient access to a single computer, or set of computers in a computer room, is now woefully insufficient to meet the demands of every student, in every classroom, as required by Digital Learning models.

This is the specific challenge the State of North Carolina is most concerned about. As a State, we have invested more than $150 million in funds to supplement E-rate for our schools and libraries. Equally important, our Session Law 2013-12 encourages a transition to Digital Learning that is effective for all learners. Current E-rate funding models that do not provide the necessary support for each student are insufficient to meet the needs of North Carolina and other states. Improving this capability is an integral part of our strategy to support learning anytime, anywhere, on any device:

As the Commission considers thousands of proposals that suggest how E-rate models should be modified, the State of North Carolina encourages it to focus on why E-rate exists and what purpose it serves. We urge the Commission to set its sights on the needs of all learners and provide funds for the infrastructure that will be required to meet those needs. One difficulty the Commission must overcome, as we have learned in our State, is the tendency to underestimate demand for a solution as it begins to work. This is always a challenge when trying to provide a framework to support individual demand. Our experience has been that, given the slow pace at which government can respond to changes in the market, it is best to build a system that encourages growth as demand

increases and puts the right incentives in place to drive down the unit cost of meeting that demand.

We urge the Commission to work with North Carolina in the demonstration project that we describe in the next section. We believe that our State's approach to delivering connectivity to schools and libraries is a model for supporting massive increases in demand and utilization. This approach has led to 100% of our schools being served by high-speed connections, (with 98% of them connected by dedicated fiber. It has led to a 65% Combined Aggregate Growth Rate (CAGR) for utilization (from 3Mb in 2010 to a projected 60Mb this year). More importantly, we believe that our plans to support Digital Learning can likewise be a model that the Commission can use to reform E-rate models in a way that would benefit other states.

III. **The Commission should immediately authorize E-rate funds to support North Carolina's consortium of schools and libraries in a Demonstration that delivers broadband access in support of Digital Learning**

North Carolina's existing broadband platform does not just represent a buying consortium, although it does operate in that manner. What sets North Carolina apart is that our consortium includes strong leaders at virtually every level and includes both public and private entities. The State has invested some $20 million a year over the last decade in supplemental funds to cover the gap in E-rate funding. Many individuals in public and private entities have also worked together to deliver detailed plans and implement specific solutions. Together, these leaders have established a model for developing and delivering access to schools and libraries that we believe can demonstrate to other states how to do the same.

We propose to mobilize this consortium to deliver full access across North Carolina in 2015 and to expand the use of the Digital Learning platform in support of the State's goals. In the paragraphs that follow, we describe (1) the consortium approach that North Carolina has taken to achieve the level of success that its schools and

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libraries enjoy today; (2) the structure of the consortium's working model that provides the framework for our request; (3) the specific plans we have to deliver broadband access to the remaining 78% of locations that have broadband to the door, but are not sufficient for Digital Learning; and (4) our proposal to partner with the Commission to demonstrate how other states can pursue a similar approach to meet the objectives that the Commission highlighted in DA-14-308, as follows:

> "More specifically, the record underscores the importance of providing consistent and broadly available support for the equipment and services needed to enable high-capacity wireless broadband within schools and libraries; greater support, at least in the short term, for last-mile deployments needed to connect schools and libraries that do not currently have access to high-speed connections; a support methodology that allows applicants to capture the long-term cost-efficiencies associated with access to scalable, high-speed connections; less support for voice services, as the cost of voice services transition in the long run to the marginal cost of packet-based voice services provided over high-capacity broadband connections; incentives for making cost-effective purchasing decisions, including incentives and opportunities for schools and libraries to benefit from economies of scale in purchasing supported services; and as much administrative simplicity as possible, while protecting against waste, fraud, and abuse."

A. A Legacy of Leadership Demonstrates Effective Consortia

North Carolina has a demonstrated legacy of leadership that established a pattern for developing actionable consortia that deliver the strategic infrastructure necessary for its citizens to achieve their own goals and objectives. Cultivating the kind of consortia that the Commission would seek to develop plans for broadband access is not new to North Carolina. It is systemic to the State's commitment to coming together to provide the strategic infrastructure its citizens need to succeed. Examples include:

- The North Carolina General Assembly provided funds in 1980 to establish a non-profit entity as a catalyst for technology-based economic development throughout the state. Five years later, North Carolina initiated an effort to develop, deploy, and operate an advanced communications network. Today, that network offers technology, tools, and services that provide access to 21st century learning with future-proof technology that serves the majority of the state.

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- In 2005, the North Carolina School Connectivity Initiative was established by similar consortia of educators, business leaders, and policymakers. Working collaboratively various groups – in partnership with the Commission and with support from E-rate funding – this group created the strategic infrastructure for the demonstration project that is being requested:

  o The North Carolina Department of Public Education (DPI) created an E-rate coordinator function that provided an actionable framework for the consortia to operate at the local level (including charter schools);

  o A public-private partnership aggregated demand across many institutions and entities and developed a private fiber network, including additional "dark fiber" capacity that took advantage of scale economies and continues to drive down the cost/mb in North Carolina. Today this fiber network serves all 100 of the States counties, operating fiber in all but 18 of these counties;

  o The North Carolina General Assembly established an ongoing investment of $20 million per year to supplement the gap in communications expenses not covered by E-rate. The State has invested more than $150 million in developing its broadband networks in support of Digital Learning, including the provision of adequate Desktop Access in 22% of its schools;

  o Working with educators, a non-profit organization, and the Friday Institute for Educational Innovation at North Carolina State University, and various other partners, the State developed technical support and professional services to help each LEA assess, evaluate, plan, design, and deploy the infrastructure needed to support Digital Learning;

  o This same consortium helped North Carolina apply for, and receive, a grant to develop The NC Education Cloud (NCEdCloud) that today provides a highly-reliable, highly-available, server infrastructure that supports K-12 education statewide. Specifically, it facilitates the migration from LEA-hosted server infrastructure to cloud-hosted infrastructure as a service, providing a world-class IT infrastructure that will be effective for every learner.

This practice of developing and working within broad-based consortia is now a well-used and respected approach that defines success in developing strategic infrastructure in

North Carolina. Strong leaders establish clear, actionable goals that make sense to each person in North Carolina. This allows the formation of a consortium, at all levels of government and across the public and private sector, to commit their resources, skills, talents and reputation to achieve the goal. Under this shared commitment to a common vision, individuals can come together, and succeed together, to further the goals of all.

North Carolina has again collaborated to develop and deploy a strategic infrastructure, comprised of an end-to-end service model that can deliver a wide variety of services – specifically, Digital Learning that is effective for all students. The demonstration project proposed here – the design and deployment of classroom access to the 78% of the schools where current limits on E-rate funding have made this impossible – will be an important part of this infrastructure. Partnering with the Commission is consistent with the second step in North Carolina's approach to strategic development: the separation of "structure" and "implementation."

B.   Aligning Structure with Implementation Delivers Strategic Success

One of the Commission's stated goals in modifying E-rate is to find and demonstrate "opportunities for schools and libraries to benefit from economies of scale in purchasing supported services." Again, North Carolina has developed a proven model for identifying economies of scale and encouraging disparate organizations to join forces, within the structure of the operating consortia, to leverage these economies as they develop and deploy solutions for schools and libraries.

The North Carolina consortia succeed by (1) committing to the solution model that can deliver the scale economies; (2) separating the work required to develop that solution from the local and individualized work necessary to take advantage of the new resources and services made available by that change; and (3) working together simultaneously to make joint progress toward the common goal. Two examples show how this has worked in practice:

- When North Carolina established its strategic objectives for developing broadband communications, it set the goal of achieving scale economies in the delivery of these services. This is why the State has encouraged the development of adequate "dark fiber" capacity and efforts to include as many qualifying institutions as possible, including other community anchor institutions such as libraries, public safety, government agencies, public health, and non-profit hospitals. This unique shared resource has demonstrated success in rural areas of North Carolina that have not been

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achieved in similarly situated states. North Carolina and its leaders believe in, and have proven the success of, this model. It is a model that identifies ways to invest in strategic infrastructure for the specific purpose of achieving economies of scale, and the benefits that come from doing so.

- When North Carolina invested in a plan to provide high speed access in support of Digital Learning it focused on several necessary components that would have to work together if the State was to achieve its goal:

    o The State aggregated its projected demand for broadband connectivity across all institutions and invested in the development of this network – in advance of the demand – including development of dark fiber capacity that would help discipline the private market for broadband access and encourage general competition, continual growth in capacity, simultaneous decrease in unit costs;

    o The legislature agreed to include $20 million in a recurring budget line item to fund the "gap" between the costs of this desired connectivity and the funds provided through E-rate. Today the State has invested approximately $150 million in support of this effort, and high-speed capacity is now present in 100% of schools. By later this year, 98% of schools will have a dedicated fiber connection, with the remaining 2% moving to these connections soon as long-term wireless contracts terminate.

    o The Department of Public Instruction (DPI), in support of K-12 schools, created an E-rate coordination office that assisted individual schools with Commission filings and became a support network or individual school teams, educating them on State plans, sharing best practices, and fostering additional economies of scale;

    o Working with various agencies, vendors and local school leaders, the State established a set of professional services that supported the design and deployment of broadband access (and classroom access), and helped develop the detail data necessary to show State and Federal officials what was in place and what it would cost to continue the build out. Developing a shared approach to defining network components and cost (affectionately referred to as "The Spreadsheet"), North Carolina was able to focus on detailed data – as

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opposed to general statements and hyperbole – when conducting the detailed work of network design and deployment. This was a great benefit to each school.

o The result has been a continued reduction in cost per unit, with a 65% Combined Annual Growth Rate (CAGR) for utilization by the individual schools. This growth in demand – and more importantly the advances in school effectiveness – would not have been possible if the strategic resource had not been in place.

North Carolina proposes to partner with the Commission in demonstrating how this approach can work broadly across the United States. By approving this demonstration project, and immediately providing the funds to deploy full broadband access across the remaining 78% of schools who have been limited by the current E-rate funding models, the Commission can take advantage of this current consortium model of shared strategic design and localized deployment. In this demonstration plan, the Commission will also gain valuable insight about how new "Cloud services" and cloud infrastructure will impact local deployments or how they may need to be considered in any new E-rate models. This opportunity for the Commission arises from the third key component of the North Carolina model, which is the detailed development and coordination of plans at the local level.

C. Detailed Strategic Planning Assists in Localized Deployment

One of the often-missed economies of scale is found in the development of detailed plans that can be effectively used by local leaders. This lesson has not been missed by North Carolina leaders. The demonstration project we propose can provide the Commission with a real-time view of how this level of planning, and the data that it develops and utilizes, can be used achieve the Commission's goal of expanded capacity and reduced per-unit costs.

The development of detailed plans, aligned with a common strategic design, has the unique benefit of creating a common language that begins to be used by each person, and each organization, within the consortium. This speeds up common education about goals, objectives, problems and solutions. It provides the ability to develop common data models that can be used for analytical, diagnostic, and modeling purposes. This common language also provides the ability to foster individualized experimentation and innovation and to align it with a generalized

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understanding and structure to best assess what is replicable in other situations and what is unique to a particular environment.

This is a lesson learned together by the leaders at the state level, by 100 counties, 115 LEAs, more than 2,331 schools, and hundreds of Community Anchor Institutions. As the focus shifts from "the pipes" to "the people" who will take advantage of systems for Digital Learning, this common language will be an important component.

As the Commission is now well aware, access is no longer only about the ability to deliver data to a single terminal at high-speed. Digital Learning ultimately promises to deliver a more effective learning experience by better matching the content or framework that is beneficial to an individual student, with the ability to offer that experience to students wherever they may be. This combines both the notions of 1:1 learning and the notion of "anything-anywhere" access inside a school. Both are envisioned, and supported by, North Carolina's approach to Digital Learning.

The foundation for this model is in place today with components like the North Carolina Education Cloud. North Carolina is positioned and ready to move forward with a demonstration of what Digital Learning can look like. The State has made strategic investments and established a mandate for making the transformation. The major impediment to this objective is the lack of inside-the-classroom access in 78% of the State's schools, a challenge that the Commission can address through the demonstration project that North Carolina proposes in the Section that follows.

IV.   A Demonstration Model for Delivering Full Access to Digital Learning

North Carolina requests that the Commission approve this plan for developing a Model for that will support Digital Learning. If approved, the State proposes to work with the Commission to develop an approach that will include information, materials, data, and analytics that the Commission can use to assist other states and the continued effort to refine the E-rate funding models.

North Carolina represents a unique opportunity for the Commission, and more broadly for the federal government, because the State has already developed a strategic plan that aligns with many federal initiatives, programs, and priorities. These associated programs and opportunities will be referenced in summary in the following description of the Demonstration Plan.

While the complete Demonstration Plan will be developed in conjunction with the Commission, and would include detail beyond the scope of DA-14-308, North Carolina

provides the following summary description in support of this request. If approved, the State is ready to immediately begin its work with the Commission and projects that initial results will be available in 2015.

Component 1:   Assessment of current requirement

North Carolina will provide detailed data on current levels of broadband access that reaches beyond the door, student utilization, and costs of service that are available today. Requirements will be developed at the individual school level, aggregated by LEAs, and aligned with standard models that project demand, available capacity, and proposed design for solutions that provide "Minimally Sufficient Service" per student.

Component 2:   Standard Network Design

North Carolina will provide "end-to-end" models that show the structure and design for delivering Digital Learning to each student, thereby providing additional insight to the Commission on the infrastructure that will ultimately be required to provide this level of service. This will provide the Commission with a unique ability to understand the cost structure and the additional costs associated with Digital Learning models. Using the detailed models for development found in the North Carolina Education Cloud, and the experience from 1:1 learning environments from Mooresville and other locations, North Carolina will work with the Commission to identify and establish standard cost models for delivering Digital Learning to each student.

Component 3:   Design and Deployment of Digital Learning

While the limitations on classroom access relate most to the current limitations in the E-rate funding structure, the questions raised by the Commission in this NPRM call into play many additional considerations that North Carolina's Demonstration will address. While the Commission's mandate is to support the nation's schools and libraries, these institutions are rapidly changing. When a state like North Carolina can effectively and efficiently leverage its education cloud to deliver content and curriculum to the poorest or smallest population, we should ask whether content should be considered a marginal cost of that cloud infrastructure. Likewise, when the ability to deliver personalized learning requires the use and sharing of Personally Identifiable Information (PII) in a manner that is both secure and trusted, questions should be raised about whether systems for identity management, privacy, and security should be considered core costs of communications.

These questions are difficult to address when presented in a specific situation where the data can be collected, presented and analyzed. It is even more difficult for policymakers like the Commission to address such questions when presented only in the abstract. North Carolina understands this difficulty because we are living with it today and working through the problems using our proven, consortium-based approach. North Carolina proposes to work with the Commission to provide a structure for understanding and collecting data about these issues in the context of this demonstration. If approved, North Carolina proposes to pursue the following plan:

- Building on its deployment of the North Carolina Education Cloud, the Demonstration will outline a set of Digital Learning services that will provide an understanding of the issues surrounding the delivery of these services. In addition to providing helpful information to the Commission, this will further additional federal goals. By requiring the use of a federated system for managing Digital Identity, the operation of the North Carolina Education Cloud provides significant operational experience that supports the National Strategy for Trusted Identities in Cyberspace (NSTIC). North Carolina's existing approach to network planning involves detailed analysis and data developed at the school level, but aggregated by LEAs as part of the State's plans for the broader aggregation of demand that informs additional support services. The Commission will be able to observe the potential for developing models that support appropriate economies of scale across the deployment of Digital Learning. It will also see how it supports, or can be supported by, other state and federal efforts. If approved, North Carolina's Demonstration project would be aligned with other concurrent network design efforts:
  - Federal legislation calls for planning for a "nationwide interoperable public safety broadband network" referred to as FirstNet. For many local areas in North Carolina that now face the question of how to support Digital Learning, the required network design analysis will align in time and scope with the design analysis required for FirstNet. At least one North Carolina county has used a common design model to achieve shared goals, with the marginal cost of one requirement offsetting the direct cost of the other. The Demonstration will provide
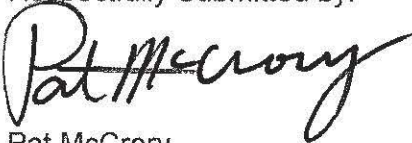
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the Commission with a unique opportunity to observe, or potentially participate, in such innovative efforts;

o North Carolina's dedication to delivering Digital Learning to all students exceeds the Commission's more narrow focus on K-12 students and provides a unique opportunity for the Commission to see how states can take a more innovative approach to network planning. That planning process aggregates demand for broadband capacity that combines demand from K-12 students with that of other learners. North Carolina's proven approach to developing strategic infrastructure allows it to align network demand for K-12 purposes with that of other statewide goals for economic development, public safety, and key services like healthcare. In this approach, new cost of service models become relevant and provide potential economies of scale that far exceed those found only inside the building of a K-12 institution. North Carolina's plan to provide Digital Learning provides the Commission with the unique opportunity to see how this approach could be utilized by other states.

V. Conclusion

North Carolina respectfully requests that the Federal Communications Commission adopt an Order consistent with the comments submitted above, and that it immediately approve funds to support North Carolina's Demonstration Project as summarized herein.

Respectfully Submitted by:

Pat McCrory
Governor of North Carolina